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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/520,872

01/11/2005

Erik Gosuinus Petrus Schuijers

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS

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BRIARCLIFF MANOR, NY 10510

EXAMINER

LERNER, MARTIN

ART UNIT

PAPER NUMBER

2626

MAIL DATE

DELIVERY MODE

02/04/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/520,872

Applicant(s)

SCHUIJERS ET AL.

Examiner

Martin Lerner

Art Unit

2626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 to 15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 to 15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 January 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Applicants' Specification, Page 4, Lines 17 to 21, suggests that the disclosed embodiment corresponds to European Patent Application No. 02076588.9.

Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office Action to avoid abandonment of the application. The replacement sheet should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, Applicants will be notified and informed of any required corrective action in the next Office Action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities:

On page 1, line 27, there should be a period at the end of the sentence.

On page 3, lines 11 to 13, Applicants' reference in the Specification to claims 1 and 13 should be deleted. Claims may be renumbered in any issued patent, and any final claim numbering may not reflect the claim numbering of the Specification.

On page 6, line 31, "IID" should be "ILD".

On page 9, line 32, there should be a space inserted between "A1" and "is".

On page 13, line 9, "monaural layer 14" should be "monaural layer 40".

On page 14, line 34 to page 15, line 1, reference to an embodiment directed to a signal should be deleted. The USPTO maintains the position that a disclosed embodiment directed to a signal may render means plus function claims nonstatutory under 35 U.S.C. §101.

Appropriate correction is required.

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Audio Encoding/Decoding with Spatial Parameters and Non-Uniform Segmentation for Transients

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claim 11 is rejected under 35 U.S.C. 101 because the claimed invention is directed to nonstatutory subject matter.

Independent claim 11 is directed to nonstatutory subject matter because it is a "signal claim". The USPTO maintains the position that signal claims represent nonstatutory subject matter because they do not fit within one of the recognized statutory categories of invention. See MPEP § 2106 - §2106.02.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1 to 2, 6, and 9 to 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Davis et al. (WO '498)* in view of *Bosi et al.*

Concerning independent claims 1, 9, 11, and 13 to 14, *Davis et al. (WO '498)* discloses an encoding method, encoder, encoded audio signal, decoding method, and decoder comprising:

“generating a monaural signal” – composite signal generator 60 generates a composite signal along path 61 by combining input signals received from paths 1, 2, and 3 (Page 7, Lines 24 to 25; Figure 1); a composite signal is a “monaural” signal because it is not separated into left and right channels, or subbands, but is combined into one channel; a corresponding decoding method and decoder is disclosed in Figure 5 (Page 9, Line 18 to Page 10, Line 17);

“analyzing the spatial characteristics of at least two audio channels to obtain one or more sets of spatial parameters for successive time slots” – spatial coder 40 generates spatial-characteristic signals along paths 41 and 42 in response to the channel subband signals received from the subbands signal generators; each of the spatial-characteristic signals represent the spatial characteristic of a soundfield that

corresponds to one or more channel subband signals in a respective frequency subband (Page 7, Lines 20 to 23: Figure 1); spatial-characteristic signals are generated as three channels by subband signal generators 10, 20, and 30 ("at least two audio channels") (Page 7, Lines 4 to 11: Figure 1); implicitly, signals are generated on the basis of frames in a temporal domain ("for successive time slots"); a corresponding decoding method and decoder is disclosed in Figure 5 (Page 9, Line 18 to Page 10, Line 17);

"generating an encoded signal comprising the monaural signal and the one or more sets of spatial parameters" – formatter 50 assembles the spatial-characteristic signals received from paths 41 and 42 and the composite signal received from path 61 into an output signal that is passed along path 51 for transmission or storage (Page 7, Lines 30 to 34: Figure 1); a corresponding decoding method and decoder is disclosed in Figure 5 (Page 9, Line 18 to Page 10, Line 17).

Concerning independent claims 1, 9, 11, and 13 to 14, *Davis et al. (WO '498)* discloses detecting transients by an increase in amplitude exceeding a threshold of various signals within a short time interval, and including in an encoded signal an indication of a transient. (Page 13, Lines 10 to 17; Page 17, Lines 14 to 17) Moreover, *Davis et al. (WO '498)* suggests that lengths of blocks can be increased in block coding schemes. (Page 13, Lines 30 to 31) However, *Davis et al. (WO '498)* does not expressly disclose the limitation of "responsive to said monaural signal containing a transient at a given time, determining a non-uniform time segmentation of said sets of spatial parameters for a period including said transient time". Still, it is well known in the

art of audio encoding to vary a block length from a long block to a short block upon detection of transients for a purpose of better representing informational content of transient frames. Specifically, *Bosi et al.* teaches a method of subband coding of audio signals using variable length windows ("non-uniform time segmentation"), where audio signals varying strongly with time and having transient components are encoded by replacing long windows of 2048 samples by a plurality of overlapping short window functions of 256 samples. One objective is to prevent pre-echo or post-echo disturbance caused by quantization becoming audible when distributed over a block. (Column 2, Lines 21 to 46) It would have been obvious to one having ordinary skill in the art to detect transients in a monaural signal of *Davis et al. (WO '498)* and determine a non-uniform time segmentation for any frame containing transients as taught by *Bosi et al.* for a purpose of preventing pre-echo or post-echo caused by quantization disturbance due to poor time resolution.

Concerning claim 2, *Davis et al. (WO '498)* discloses generating a composite signal ("said monaural signal") by combining three channel subband signals ("at least two input channels") by subband generators 10, 20, and 30 (Page 7, Lines 4 to 11; Page 7, Lines 24 to 25: Figure 1).

Concerning claim 6, *Davis et al. (WO '498)* discloses generating spatial-characteristics signals in either or both of two forms, as a Type I signal, representing a signal level, and a Type II signal, as some indication of a soundfield width or dispersal

(Page 10, Lines 18 to 33); broadly, at least signal level and dispersal width represent two parameters that are "localization cues".

Concerning claims 10 and 15, *Davis et al. (WO '498)* discloses an output for an output signal along path 51 from formatter 50 (Page 7, Lines 30 to 34: Figure 1); implicitly, there is an input receiving an audio signal for an encoder of Figure 1; a decoder has an input for an encoded audio signal received from path 501, and an output for output signals along paths 561, 571, and 581 (Page 9, Lines 18 to 33: Figure 5).

Concerning claim 12, *Davis et al. (WO '498)* discloses an output signal is passed along path 51 for transmission or storage ("has been stored") (Page 7, Lines 30 to 32: Figure 1).

8. Claims 3 to 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Davis et al. (WO '498)* in view of *Bosi et al.* as applied to claim 1 above, and further in view of *Aguilar et al.*

Concerning claims 3 and 4, *Bosi et al.* discloses encoding frames, or time slots, of transients by a non-uniform time segmentation, but omits generating transient frames with a parametric sinusoidal encoder or a waveform encoder. However, both parametric sinusoidal encoding and waveform encoding are known prior art methods of encoding an audio signal. Specifically, *Aguilar et al.* teaches a method and system for hybrid coding, where high quality speech is synthesized by combining waveform coding in a baseband and parametric coding in a high band. (Column 1, Lines 10 to 32)

Waveform coding is implemented by a relaxed code excited linear predictor (RCELP), and the high band encoding is implemented with a Harmonic coder. (Column 1, Lines 48 to 51) Multiple parametric encoding models include, preferably, a sinusoidal transform encoder ("parametric sinusoidal encoder"). (Column 2, Lines 20 to 27) The objective is to obtain a higher quality of speech synthesis by hybrid subband coding. (Column 1, Lines 11 to 19) It would have been obvious to one having ordinary skill in the art to utilize either a parametric sinusoidal encoder or a waveform encoder as taught by *Aguilar et al.* to encode transients of *Bosi et al.* for a purpose of producing a higher quality of speech synthesis by hybrid subband coding.

Concerning claim 5, *Bosi et al.* suggests encoding transients for audio encoding according to a standard of MPEG layer 3 ("a mp3 encoder") (column 1, lines 11 to 16).

9. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Davis et al.* (WO '498) in view of *Bosi et al.* as applied to claims 1 and 6 above, and further in view of *Baumgarte et al.* ('553).

Davis et al. (WO '498) discloses spatialization cues including signals of Type I and Type II (Page 10, Lines 18 to 33), but omits spatial parameters further including a parameter that describes a similarity or dissimilarity of waveforms that cannot be accounted for by localization cues, wherein the parameter is a maximum of a cross-correlation function. However, *Baumgarte et al.* ('553) teaches backwards-compatible perceptual coding of spatial cues, where each pair of frequency bands for left and right audio signals are compared to generate one or more spatial cues (e.g., an ILD value, an

ITD value, and/or an HRTF). For each frequency band, a cross-correlation between the converted left and right audio signals is estimated. The maximum value of the cross-correlation, which indicates how much the two signals are correlated, can be used as a measure for the dominance of one source in the band. ([0074]; Figure 10) An objective is to provide spatial cues to generate audio signals for a perception of being produced at different positions relative to the listener that are fairly accurate and address bandwidth problems. ([0003] - [0004], [0013], [0074]) It would have been obvious to one having ordinary skill in the art to produce spatial parameters including a parameter that describes a similarity or dissimilarity of waveforms from a maximum of a cross-correlation function as taught by *Baumgarte et al.* ('553) in a method and apparatus for encoding and decoding multiple audio channels at low bit rate of *Davis et al.* (WO '498) for a purpose of producing an audio signal at different positions relative to the listener that is fairly accurate and addresses bandwidth problems.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to Applicants' disclosure.

Princen et al., Suzuki et al., Huang, Edgar, Smith et al., Alvarez-Tinoco et al., Norris et al., and Oomen et al. disclose related art.

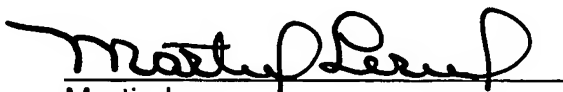
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (571) 272-

7608. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ML
1/28/08


Martin Lerner
Examiner
Group Art Unit 2626